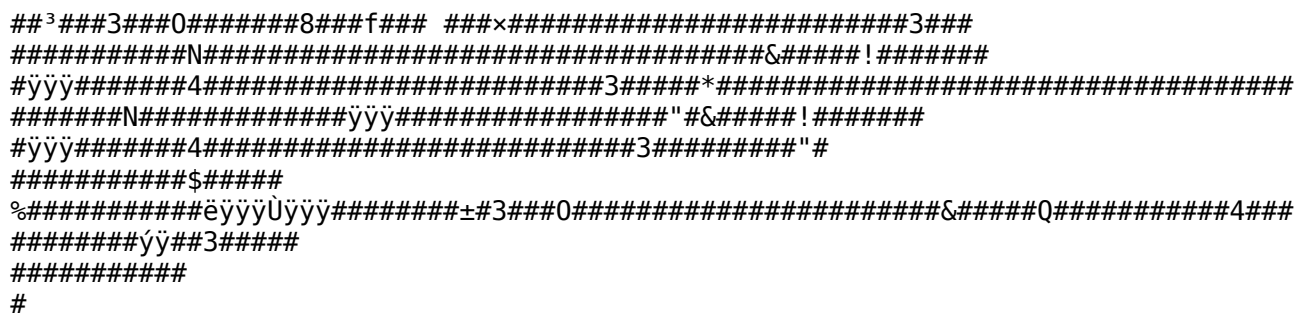

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###ÿÿ#####ÿ’#ÿÿd#########d#########ï###We’re here to teach you everything we know about Operational Risk Management. What are you going to do for the rest of the week? Before we get started on the nuts and bolts, let’s take a look at what we’re trying to accomplish this week.#

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□The goal is to train, deploy, defeat the enemy and return with all hands. When we forget, suspend, or ignore normal operating procedures, these tasks become dangerous. We must comprehensively incorporate ORM. Goals must be weighed against risks, and controls implemented to make operations as safe as possible. From the battle group commander to the most junior seaman, we must all carefully weigh the possible impact of any decision.□#

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#######d#2#######3##□##í÷#öxü)üÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########□###The safety network is a two-way dialogue. Insights, concerns, and lessons learned must be exchanged up and down the chain of command. #

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ÿÿ####ÿÿ#####ÿ□#ÿÿd#########d#########²###* The Dynamic nature of our current operations and potential for increased presence requirements place tremendous demands on both our personnel and resources. As we strive to train realistically and effectively (that means we have inherent risk) and safeguard our assets, we must make these thoughts part of the planning process.* Our mission is readiness and the Safety Center product is awareness. **You are critical to the effectiveness of the cultural mindset that will usher in a safer future.** Information / Knowledge / Wisdom□ We are doing great but like all things we can do better!□* I will explain to you where our major problems exist and where we have taken initiatives to get a handle on them to improve fleet wide safety. I will throw out some new ideas, not as food for thought, but as food for ACTION.Let□s talk about where we are & what initiatives are ongoing? A lot of knowledge & wisdom is here - let□s share it.

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#<#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########ü###Angled decks  Aviation Safety
Center            Naval Aviation Maintenance Program#      established in 1959
(NAMP)                  RAG concept initiated                    NATOPS Program
initiated 1961                            Squadron Safety program
                  System Safety #                                Designated
Aircraft                                                   ACT
```

###ÿÿ#####ÿ□#ÿÿd#########d#########ä###You’ve probably seen this chart of where we’ve been over the last four decades. Numerous technical initiatives and standardization programs have reduced our mishap rate.   Our Safety Program chronicles these successful risk assessments and implementation of controls in a REACTIVE nature.For Example: 1. (1950’s) The new jet hit the wire barricades with fatal results so the angled deck is adopted.2. A lack of standardization and training was reflected in mishap rates above 50 so NATOPS and FRS’s were established.All of these initiatives have contributed greatly to our low mishap rates today.**SAFE OPS = product of enforced standards, realistic training that modifies behavior.**Can’t ZERO out risk.Our newest tool to mitigate risk to an acceptable level is Operational Risk Management. This is our PROACTIVE thought process used to further reduce the mishap rate through correctly assessing risk and implementing controls.Let’s take a look at more recent aviation mishap trends.

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dûÿÿ ###ÿÿ#####ÿ□#ÿÿd#########Ôÿ########F###Five-Year Trends Are Down#Navy &
Marine Corps Class A□s, FY87-8/16/97
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As we look at aviation class A mishap rates, we see an overall decrease over the past ten years. However, the slope over the last 3 years is going the wrong way.When we look at the first 5 years of the 10 year period compared to the last 5 years we see some improvement and FY 96 is better than the last 5 year average.During FY 87-91 the rate was 2.70 while the FY 92-96 rate was 2.50. The FY96 rate of 2.35 was even better.However, we don’t see the steady decrease that we’d like to see. Unless we do something different, we are going to continue on what’s essentially a plateau in mishap rates, while the cost of losing aircraft and people increases.Let’s look at the cost associated with the mishaps on this chart.#

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###d#2##########ÿ□#ÿÿd#########d#2#######3##□## #Ôõ##Öÿÿÿ####ÿÿ#####ÿ##ÿÿd######
###d#########□###FY 87-91 (mishaps)   2.70FY 92-96 (mishaps)   2.50FY 94-96
(mishaps)   2.11FY 96:     (36mishaps)  2.35FY 97:       31 Dec 96       2.10
(8Mishaps)
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      #ûÿÿ####ÿÿ#####ÿ□#ÿÿd#########Ôÿ########J###Flight Mishap Costs, FY87-
96#Navy & Marine Corps Class A□s#Million Dollars
```

###ÿÿ#####ÿ□#ÿÿd#########d#########$###Unlike the general downward trend in mishap rates, the cost of mishaps is on the rise. The first five years (FY87-91), average cost per year was $678 million, while the last five years (FY92-96), average cost per year was $776.3 million, an increase of 14.5 percent.In FY 96, we lost 39 aircraft to mishaps. In FY97, we are only scheduled to purchase 40!It is obvious that we must do something to further reduce mishaps and to preserve our remaining assets.FY94 and FY95 were the best two years in Naval Aviation in terms of mishap rates.

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>#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########Ô### 1. Command climate 2. Aircrew coordination training (ACT) program 3. Positive, no penalty use of HFC/HFB 4. Information flow (hazard reports, OAG, etc.) 5. Improvements in quality of training 6. Risk assessment/management approach to decisions 7. Overall safety awareness & communications flow 8. Better maintenance 9. Clear, detailed sop and go/no- go criteria10. Strict accountability for deviations11. More conservative approach to operations

###ÿÿ#####ÿ#ÿÿd#########d#########ø###CNAL/CNAP/CNARF wanted to figure out why things were going so well, too. They asked the fleet operators to tell them what was contributing to the low mishap rate. This is the list of the top eleven factors the operators felt led to their success.

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1. Command climate 2. Aircrew coordination training (ACT) program 3. Positive, no penalty use of HFC/HFB 4. Information flow (hazard reports, OAG, etc.) 5. Improvements in quality of training 6. Risk assessment/management approach to decisions 7. Overall safety awareness & communications flow 8. Better maintenance 9. Clear, detailed sop and go/no- go criteria10. Strict accountability for deviations11. More conservative approach to operations

###ÿÿ#####ÿ□#ÿÿd#########d#########Õ###Of note, the three areas these TYCOMs felt had the most potential for mishap prevention (in conjunction with the right command climate) were ACT, HFC/HFB and risk assessment/management approach to decision making.i

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      Tüÿÿ ###ÿÿ#####ÿ#ÿÿd#########Ôÿ########I###Marine Corps Has Highest Rate#
Class A Flight Mishap Trends  FY90-8/16/97#
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###ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########\###In 1987, the Army began incorporating risk management into their training and doctrine. After 1991, when risk management had reached the majority of the operators, the Army mishap rates decreased significantly, and are now lower than all other services. The Army attributes this dramatic change, at least in part, to their use of risk management.

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#############ÿ□#ÿÿd#########d#############We find from studying mishap causal factors that the greatest risk is the person in the machine.Of all USN/USMC aviation Class A FM over the last five years, 4 out of 5 involve Human Error.Every Hand that flies, fixes or supports aircraft has the opportunity to introduce human error. The human error problem is very difficult to control, compared to the technological and programmatic challenges of the past 40 years. It is less predictable and harder to analyze and correct than an equipment or procedural issue.#

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#########àÿ##úÿ####Ó###Dissect mishap data Safety culture assessment Benchmark successful programsRecommend process improvements# □ Leadership# □ Training# □ Operational Risk Management# □ Information management# □ Investigations##

##########ÿ#ÿÿd#########d##########.###This past spring CNAP chartered the Human Factors QMB to determine processes to reduce or eliminate Human Factors Mishaps. The goal: Reduce Human error-caused Class As by 50% in 5 yrs and 75% within 10 yrs. HOW?1) Were using a NAVSAFECEN behavioral analysis model to classify types of human error. Identifying types of human error will help us direct our intervention strategies. (Self-discipline, Skill & Knowledge, Mental/Physical Condition, attitudes & Motivations)2) NPS ASO Staff developed Command Safety Questionnaire and administered to fleet cross section with interesting results (Unit tasking/resource allocation, ORM implementation & support)3) Identify/review successful programs in industry, other services, and elsewhere (DOT, DOD, Airlines, etc)4) Recommend process improvements (innovative, out-of-the box ideas) (recruitment screening, training, pipeline placement, etc.)PAT Teams organized for - Leadership/Accountability/Policy (LAP); Training/Qualifications/SOP (TQS); ORM: Safety Information Management (Sim); Mishap Investigations- already producing valuable information. Video teleconferencing heavily relied upon to bind all participants together.
This is a proactive initiative by senior leadership that holds great promise. Lets take a look at some of the QMBs findings.

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#ÿÿd#########d#########}###Naval Op ACClass As w/determined Aircrew or
Supervisorycausal factorsMINUSpurely NAVAIRSupervisory(5 still under inv)#

###ÿÿ####Uÿv#ÿÿK#########d#########A###Known Unsafe SUPV CONDs in SQDRNS such as INADQ SUPV, PLND INAPP OPS, Known A/C PROB, and SUPV Violation are found in 51% of the mishaps included. Aeromedical Unsafe A/C CONDs that exist before flight or develop in flight are found in 28% of the mishaps. Readiness Unsafe A/C CONDs involve misjudgments or violations that affect the ability to perform are found in only 3% of the mishaps. CRM Unsafe A/C COND from poor coordination (from pre-flight throughout flight) are found in 48% of the mishaps. Accidental Unsafe A/C Acts stem from attention failure (slip) and/or memory failure(lapse) or rule/experience error (mistake) and are found in 87% of the mishaps.   Violations Unsafe A/C Acts stem from rule bending/breaking are found in 40% of the mishaps. It is contended that an Unsafe SUPV sets the stage for an Unsafe A/C COND or Act.   24% (n=45) of the mishaps with Known a SUPV COND also have a Readiness A/C Unsafe COND and/or a Violation Unsafe A/C Act. Further, according to the Domino Theory removing any single cause factor can potentially prevent a mishap. Therefore, eliminating Known Unsafe SUPV CONDs, Readiness Unsafe A/C CONDs, or Violation Unsafe A/C Acts through better leadership and accountability could have prevented 69% (n=127) of the human factors related mishaps.À

###ÿÿ#####ÿ□#ÿÿd#########d#########□###The most prevalent types of human error are shown here in a matrix with potential intervention strategies being addressed by the QMB. An X in the block indicates that the intervention strategy will reduce the type of human error listed in the left hand column. Notice that ORM has the potential to affect all of the types of human error prevalent in naval mishaps over the past five years.-

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      q#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d############# Mishap aircraft was dash 2 of a scheduled, night, NVD, SEAL insertion/extraction as part of Air Wing work-up. Insertion went late but as planned; extraction was aborted. While loitering at low level after mission abort, aircraft struck power-lines and crashed.

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ÿÿ####ÿÿ#####ÿ#ÿÿd#########d#############Lets look at an example where ORM would have made a difference. This was the aircrews first night flight in the area. The crew had flown a day low level the day before with local pilots to ID wire hazards but did not fly the route they flew the night of the mishap.Neither the MHAC nor the MCP had flown NVGs in 40 days. The night of the mishap was starlight conditions. (They were legally current but likely not proficient).The lead aircraft climbed to attempt comm with the SEALs to coordinate extract and left the MA low. The pickup was aborted at SEALs request.The crew was unsure of position because they used visual NAV vice GPS and wandered off the range where they struck the wire that crossed a ravine.Mishap aircraft was scheduled for wire strike mod after this detachment.

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#&#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########e###* Fundamental building blocks*
Group values and standards* Medium for growth* Shaped by leadership#
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##########ÿ□#ÿÿd#########d#########í###To have the kind of far-reaching effect we hope for, ORM must be thoroughly integrated into our culture.Culture is □the way we do things□ in an organization. To make ORM part of this culture, we need to integrate it into existing tasks, SOPs, instructions and training rather than make it a stand-alone program. We must avoid making ORM a program which requires command instructions, additional paperwork and inspections, and strive for complete integration into the way we do business.h

###ÿÿ#####ÿ□#ÿÿd#########d#########O###ORM is a process, not a program. I like to equate ORM to leadership. We don□t have a program for leadership, yet it is fundamental to our success. Leadership is folded into our training and doctrine from our first days in the service. ORM will be most effective if we can integrate it into our culture as completely as leadership.

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###ÿÿ#####ÿ□#ÿÿd#########d#########À###Although your junior people may not need to know the process in as much detail as your more senior planners, everyone in the command must understand and apply the basics. The CO and department heads may not be aware of the hazards faced by the airman in performing a particular maintenance procedure. Each individual must be able to apply the principles of ORM at their level and bring unacceptable risks to the attention of the chain of command.

###ÿÿ#####ÿ#ÿÿd#########d#########Ó###The concept the QMB has developed is for Naval Aviation. We believe that ORM should be implemented in the entirety of the Naval service, but the plan now is for Naval Aviation to take the lead in implementing it.This plan is a low cost - high payoff solution that leverages, to the maximum extent possible, the Army's very successful implementation of ORM.The idea is to have ORM taught from cradle to grave at every stage of a naval aviator's career from Aviation Preflight Indoctrination, to aviation command. The training plan will also include flag officers and senior O-6 COs. You will be the key to driving Phases I and II.Phase I is the "Jump Start for Operational Units" that shotguns ORM training into the fleet. Phase II starts the cradle to grave training by implementing it in the training command and undergraduate pilot training. Phase III training expands to the Leadership continuum and enlisted maintenance training.We expect that Phase I training of squadrons and senior operational leaders will begin in 3rd quarter FY97. Phase II training of flight students at CNATRA commands, FRSs and FWSs should begin around 4th quarter FY97. We hope to have Phase III training coordinated with CNET/N88 early FY98.÷

###ÿÿ#####ÿ□#ÿÿd#########d#########p###These are the different types of ORM training we□ve designed to reach various levels of leadership in the fleet.

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I#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d######### ###CONTENT: ORM terms and definitions ORM introduction/concept Four Principles of ORM ORM vs. traditional approach Benefits of ORM Three Levels of ORM Time Critical ORM, examples and demonstration Specific applications (connection to existing processes/procedures)

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      Y#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########Q###CONTENT:  Indoctrination
Training plus: Deliberate ORM process and demonstration Basic hazard
identification, tools and examples Hazard assessment tools and examples Risk
assessment tools and examples (command worksheets/tools) Deliberate ORM
practical exercise Specific applications (connection to existing
processes/procedures)  #
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□##Aöóþ]   Y#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########v###CONTENT: User Training plus: In-depth hazard identification tools and examples Risk assessment tools and examples (cross section of available tools) Communication/presentation approaches Command implementation and leadership concepts Specific applications (connection to existing processes/procedures) On-site application of ORM techniques (Tiger Team site visit only)

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###ÿÿ#####ÿ□#ÿÿd#########d#########´###Leader training is an abbreviated version of advanced training, designed to give COs/XOs an understanding of in-depth and deliberate ORM and how to implement it within their units.

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###ÿÿ#####ÿ#ÿÿd#########d##########?###Senior leader training is an overview of ORM with an emphasis on implementation status and goals. RADM Dirren and RADM Nutwell have been providing this training to flag officers. The plan calls for the TYCOM representatives trained in this course to brief O-6 commanders (CV/CVN, CAG, Type-wing) within their TYCOM.#

###ÿÿ#####ÿ□#ÿÿd#########d#########ô###The first phase of the ORM Implementation Plan is designed to get senior naval aviation leadership knowledgeable about ORM, educate squadron leadership and assist squadrons in implementing it as quickly as possible.Naval Safety Center has scheduled two Advanced ORM/Train the Trainer courses in Jan/Feb. The courses will educate future TYCOM trainers on all levels of ORM and equip them to establish training within their TYCOMs.The TYCOM trainers will then conduct 1 on 1 senior leader briefings with senior O-6 COs and provide Advanced Training and On-site visits in squadron workshops. (We have already received a request from CAG 7 for training.)Senior Leader training for flag officers consists of 1 on 1 briefings by RADMs Nutwell and Dirren.

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aircrew and maintainers
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#O#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########C###   Advanced course for all
Department Heads and    Senior Enlisted#
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o#ÿÿ####ÿÿ#####ÿ##ÿÿd#########d#########U###   Site visit to assist with incorporating ORM techniques   into squadron processes#

###ÿÿ#####ÿ#ÿÿd#########d#########û###The units will be trained at squadron workshops, conducted by the TYCOM trainers. The intent is to ensure only TYCOM trainers who received training from NAVSAFECEN or a follow-on train the trainer course teach the fleet, to keep the teaching expertise high. The workshop is three days long, assuming that no one knows anything about ORM.The first day is to teach the INDOC and USER level to everyone possible in the unit. The second day, squadron leadership gets advanced training, followed by CO/XO leader training.The third day is a site visit where the TYCOM Trainers actually go into a squadron and help set up already proven ORM techniques. This is an important part, because it is this assistance that gets units up and running with ORM immediately.ì

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##»###- VT/HT Flight Instructor (user/adv)- Student API (indoc) and VT/HT (user)
- FRS (user)- FWS/Type Wing (adv)- PCO/PXO ASC course (leader)- Follow-on Train
the Trainer School (adv/TtT)#

###ÿÿ#####ÿ#ÿÿd#########d#########÷###The long term plan will be perpetual training required to keep ORM training current in the fleet. It implements the cradle to grave training by expanding the fleet training to include the NATRACOM. It starts with educating API and training squadron instructors, followed by implementing ORM in the training squadrons and educating API and flight training students. CNATRA reps at this training will b e the key to driving this aspect of Phase II.ORM training continues through each warfare pipeline in the FRS and FWS but is more of a refresher training that is tailored for each community. Again, folks attending this training will be the drivers for getting appropriate ORM training incorporated into FRS and FWS curricula. Finally, phase II training includes advanced training for Aviation Safety Officers and leader training for PXO/PCOs at Monterey. As necessary (depending on the degree of implementation in the leadership continuum), a follow-on train-the-trainer course could be established by CNET.Ø

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#ÿÿd#########d#########□###- Leadership Continuum (appropriate to seniority)- Aviation □A□ Schools (indoc)- NAMTRAGRU (user)- Aviation Safety Specialist Course (advanced)

###ÿÿ#####ÿ□#ÿÿd#########d#########Ñ###We believe ORM is an essential leadership tool for the entire Naval service; therefore, the proper place for the training to reside is in the Leadership Continuum where it should be taught at every level from E-5 to PCO.Teaching ORM in the Leadership Continuum will enable the warfare communities to minimize the generic training required and focus their efforts on community specific training.The Leadership Continuum is not aviation specific.Aviation specific ORM will be taught at the Type wing/FRS Department Head school and the ASO/ASC courses in Monterey.Finally, to round out the unit ORM expertise, junior enlisted maintenance personnel should be trained as they begin their aviation maintenance training.d

##########ÿ□#ÿÿd#########d#########Y###Our vision is that once ORM is completely implemented, the expertise in a squadron will vary based on experience and level of seniority. Junior Officers will learn generic user ORM topics at the Leadership Continuum (DO course) and aviation specific applications in the training command and FRS.DHs will learn generic advanced ORM topics through the Leadership Continuum and then have RM focused on naval aviation when they go through their type wing/ FRS sponsored DH training.COs and XOs will have had the advanced training as a DH and will get generic ORM at the leader level in the Leadership Continuum and aviation focused ORM at the ASC course in Monterey. Senior O-6 COs and Flag Officers would have had the benefit of all this training through their career. This is how it should eventually look; the implementation plan is how we get there.½

###ÿÿ#####ÿ□#ÿÿd#########d#############Bottom line to this entire brief is if we don□t do something different, next year will look a lot like this year.Based on statistics we can forecast our future and this is it for FY-97. The prediction is very grim. The numbers in black are forecasted, those in red are actual (through August 18 of this year). We forecast 80 operational mishaps. We also projected 58 operational and 171 non-operational deaths. Based on past experience we project 3/4ths of our deaths to occur OFF-DUTY!In FY-96, we forecast 80 operational mishaps and experienced 84 - the 3rd best year ever. (number rate).We forecast 57 operational deaths and experienced 71 - the 4th best year ever (number rate).We forecast 188 non-operational deaths and had 162 - the best year ever (number rate).We did better on the non-operational side than on the operational side in FY96.We are here to save people and other government assets. Teaching people to use Operational Risk Management to help them make better risk decisions can help us achieve that goal. #

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